IX. *A Revision of the genus* Tarucus. By G. T. Bethune-Baker, F.L.S., F.Z.S.

[Read April 4th, 1917.]

Plates XIV–XX.

A year or two ago Mr. Rowland-Brown questioned me on the distinctness of the European species of the genus *Tarucus*, Moore, and my answer was that the clasping organs of the males were different, and that therefore I considered the species were distinct. This conversation led me to look up the whole matter afresh, and in doubtful cases to make more preparations of the genitalia, thus bringing to light the fact that one of the Indian or a new species occurred in Egypt and Algeria as well as the well-known and first-described species *theophrastus*, Fab.; this discovery involved a more extended research of the Indian species of this complex and very difficult little genus.

My investigations have caused me great searchings of heart, not on the distinctness of the species themselves, but rather on the questions "What is a species?" and "On what characters are we to form species?" It is quite obvious that in this genus it is scarcely possible from the pattern alone to decide, in certain cases, which is which, and yet it is equally certain that Butler's and Moore's species, which de Nicéville called so strongly into question, are quite distinct from *theophrastus*, their clasping organs are quite different, and they also are different from each other in addition to differing from that species described by Fabricius.

I have endeavoured to make a table of differences in the pattern between the species, but in vain, for whilst there is a general look that enables one to assign a name to the specimens, and as a rule the assignment is right, yet it often breaks down; for instance, I have specimens from Egypt and from Algeria that I had placed under *theophrastus*, but their clasps proved that they were in reality a new species altogether; again, specimens from Lahej (Arabia) and from India, that I had no doubt were *nara*, proved by their genitalia to be *theophrastus*. There

is, of course, an explanation so far as the pattern is concerned, for Lahej and Bhuj were both dry-season specimens, and this would account for the pattern being small and but finely marked, even though the specimens themselves were of an average size. The difficulty generally occurs just with such specimens as these; localities unfortunately do not render much assistance, for if we are to rely on the determinations of observers and authors like Moore, de Nicéville, Bingham and others (and I think we can rely on them, as in some instances I have been able to confirm their identifications from my own collection), the three commonest Indian species overlap each other. The whole matter is very difficult and complex, but it shows that we must not depend entirely on pattern when dealing with closely allied species. On the other hand, I believe that in the formation of genera we ought not to completely ignore pattern, especially where there is a strong dominant arrangement of it that enables us to identify the genus of the species directly it is seen.

The genus is so closely allied to *Castalius* that reference to the species usually placed therein became necessary, and I found that in one species at least—*ananda*, de Nicéville—the genitalia led me to think that it must be included in *Tarucus*, whilst an examination of the wing scales confirmed it, for in *Castalius* there are no "battledore" scales, but in *Tarucus* they are plentiful, as they are also in *ananda*.

The distribution of the genus is interesting; in the Palaearctic region three species occur which are confined in that area to the Mediterranean subregion, two being peculiar to it; six species occur in the Ethiopian region (including Socotra therein), of which five are peculiar to it; in the Oriental region twelve species obtain, only one of them (*T. theophrastus*) occurring outside its limits, and this one is the most widely distributed of all, obtaining in each of the previously mentioned regions; the Australian region is just invaded in its Austro-Malayan or Papuan subdistrict, for on its extreme western limits a single species has been recorded from Celebes, and this, as would be premised, is peculiar to that wonderful island.

The genitalia are essentially Lycaenine, and they belong to the *Lampides* section; they have, however, certain characters that are quite peculiar, there is no "furca"—the usual "furca" is a bifurcate organ arising from the clasps near the base. In the place of this there is another

organ of special design, there is also a long horn-like sclerite attached to each clasp arising from the same point, or very near the same point as the special organ just referred to, but developed in the opposite direction. These sclerites appear to me to be capable of independent movement; this, however, would not prevent combined action with the other organ should occasion arise; they lie within the hollow of the clasps just above the lower margins, and rise slightly upwards and forwards, often extending beyond their (the clasps) apices. It is difficult to believe that they can assist the clasps at all in gripping the abdomen of the female, but they might easily drop just below the abdomen and be useful as excitatory agents by tapping each side of the lower area of the sternite; they might well be called the "virgae excitatae." The special organ referred to above can be termed the "tectorius" (used for a covering); it seems to me to be different from the "anellus," being in no sense a cone-like tube, nor anything like it; it also quite differs from the "manica," and is a distinct and peculiar development that I have not hitherto met with. The "tectorius" rises from a point in the very rear of the clasps, expanding immediately hindwards (*i. e.* towards the abdomen) into two broad chitinous curtains—one on each side—lying within the cingulum; these taper more or less rapidly in different species and assume different contours. At the penal aperture the anellus becomes apparent in the shape of a solid ring, or, as in *theophrastus*, a loosely fitting tube through which the aedoeagus passes; this ring is soldered on to the lateral curtains of the tectorius, which rises slightly above the anellus, forming a small hood over it. The whole organ is capable of considerable movement fore and aft, and in the latter case can be moved right to the back of the cingulum, in which case it takes with it the aedoeagus, which is then thrown right out of its usual horizontal position into a sharply angled one. It is most probable that this organ (the tectorius) may be the persistence of a very ancient character; it is very closely similar to the cingulum or girdle, keeping the aedoeagus strictly in position, and it appears to me to be a reasonable proposition to consider it a reversion to the original structure when there were two sets of armatures, one around the anus and another protecting the sexual organs; or it may be an instance of the survival of an atavic character.

De Nicéville, when he dealt with this genus in 1890 (Butt. Ind., III, p. 187), wrote, "Omitting *T. plinius*, which is easily recognised and belongs to a different group, six forms of *T. theophrastus* have been recorded from India, and are maintained as distinct species by Mr. Butler. I am able to recognise as satisfactorily distinct two only of these forms, *T. theophrastus* and *T. venosus*." The author then goes on to record the various species in the usual way, but states definitely under each name that he regards it as a form of *theophrastus*. The very celebrated French entomologist, C. Oberthur, also records, in his incomparable "Etudes de Lepidoptérologie Comparée," fascicule iv, p. 158 *et seq.*, a similar opinion, only he goes further and treats *venosus* also as a form of *theophrastus*, and he confirms this in vol. x, p. 377. Both Bingham and Swinhoe have followed de Nicéville's lead, going further, however, in that they give as synonyms all the other species except *venosus*. I believe I wrote to my old correspondent, de Nicéville, and informed him after the publication of his third volume that both *T. balkanica* and some of the Indian species had genitalia quite different from *T. theophrastus*. I have long intended to revise the genus and the time has now come when it ought to be done, because I have no doubt at all that all the species Butler refers to will stand as entirely separate species from the European one. He (Butler), however, was not correct in his idea that *theophrastus* would turn out to be confined to Europe; it is quite a common species in many parts of India, and it occurs in Africa south of the Sahara.

The species group themselves by their genitalia into three well-marked sections, viz. the *balkanica* section, including *nara*, *callinara*, *extricatus*, *alteratus* and *venosus*; these all have short, broad clasps that are provided with longish, strong, horn-like sclerites; *theophrastus* will form another section; it has a long, narrow clasp, and a long aedoeagus; whilst *sybaris* and *grammica* and *quadratus* have short very broad clasps, with no horn-like sclerites, different in shape to either, but more nearly allied to *balkanica* than to *theophrastus*; the last of the three, *quadratus*, forms the connecting link with Fabricius's species in the increased length of the clasps and the long tooth at the apex.

It is interesting and curious to find that both in this genus and also in *Castalius*, the species that have been

selected as the types of the genus have both long harpagones (clasps), by no means typical of the bulk of the genera, but in each case there are connecting links between them. The two genera are evidently closely related. They can, however, be separated by two characters; the species of *Tarucus* have androconia (*i. e.* battledore scales), none of the species of *Castalius* have them; there are only two or three that I have not had the opportunity of examining, and I believe I am correct in thinking that those I do not know are not likely to have these scales. The second character is the genitalia, the general form of the clasps is quite different, the aedoeagus differs also, whilst the shape and position of the cingulum and tegumen confirm the previous points; there is also no tectorius. It will be seen that my conclusions have been brought about in the first instance solely by my investigations of the genitalia; these led to the necessity of re-grouping most of the species and very many of the individual specimens, and in so doing I have discovered other species, evidently quite distinct, that had always hitherto passed under other well-known names. Under these circumstances it was manifestly advisable to confirm these points, and for this I turned to the androconial scales that are so marked a character in the males of the majority of the *Lycaeninae*; these amply confirm the correctness of each of the specific identifications I had made, and they also confirm the re-grouping of such species as *ananda* and *bowkeri*, neither of which had hitherto been included in the genus. The South African species (*bowkeri*) is, I admit, aberrant; its pattern differs from the rest of its allies in certain particulars, its clasps differ also, but the androconia are so close to *theophrastus* that I have included it with the others. In cases of this kind it appears to me to be better to do this, indicating the small divergencies, rather than to create a new genus for a single species that otherwise groups itself very naturally with its close allies.

Tarucus nara, Kollar. Plates XIV, figs. 1, 1*a*; XV, fig. 1, and XIX, fig. 19.

Lycaena nara, Kollar, Hügel's "Kaschmir," iv, pt. 2, p. 421 (1848).

The general consensus of opinion on the identification of this species seems to me to be correct; it is almost as

large as *venosus*, but the primaries are more triangular and look broader at the termen. In colour it is lustrous violet with narrow dark borders. Below it is white with blackish spots, the postmedian and subterminal lines being strongly marked and but slightly interrupted at the veins, the former is sharply turned round (almost angled) at vein 6 basewards to the costa; in the secondaries the postmedian line is continuous and slightly crenulated, whilst the spots are well separated. I think it would be well to say that I know of no pattern or mark that holds true in a long series of any species in this small genus with the exception of *sybaris* and its allies; they all seem to gravitate towards *theophrastus*, whilst *theophrastus* in its dry-season forms gravitates towards one or two of the Indian species such as *callinara* or *extricatus*. I have never experienced such difficulty in separating species as I have done with these. There are only three that I have not made mistakes with even after the utmost care, and had it not been for the very distinctive genitalia of each species, I should have found it quite impossible to decide with certainty what some forms were. In diagnosing the pattern I have picked a good average specimen, but with either the dry or wet season forms the diagnosis will not be absolute. It is fortunate that the genitalia are quite distinctive, otherwise it would have been impossible to say, as we can say now, that Moore's and Butler's eyes served them well and correctly, when, without any knowledge of the reproductive organs, they described the forms they had before them as new species.

The genitalia (of *nara*) are easily separable from its near allies. The clasps are subovate with the upper margin slightly flattened, the rounded front edge being furnished throughout with a row of sharp teeth. The horn-like sclerites (virgae excitatae) are wedge-shaped, tapering to a point, and not extending beyond the apex of the clasp. The tegumen is typical of the first section of the genus, being deeply divided with only a narrow connecting ridge at the rear; the falces are shortish and stout. The aedoeagus is also fairly typical of this section, it is moderately stout, shortish, with the front portion beyond the zone suddenly reduced, and rapidly tapering to a point. The clasps are furnished with long strong bristles, and the tegumen with finer and shorter ones. The tectorius is very broad at the base, tapering at its front edge rapidly up to the anellus. The androconia are rounder and shorter and smaller

than any of its allies; the apex or distal extremity being more deeply convex; there are fourteen rows of lamina with minute tubercles, the eighth row being the longest, though the row on each side runs it very close, the eighth, however, marks the summit of the convex apex; the proximal or basal portion of the scale is asymmetrical, being more rounded on one side of the foot-stalk than the other.

I should, perhaps, explain that in this genus, as generally with the *Lycaeninae*, the foot-stalks are quite straight, arising from near the centre of the androconia, and that when I refer to the proximal end or base I always mean the contour of the scale itself, not the narrow foot-stalk.

Tarucus venosus, Moore. Plates XIV, fig. 2; XV, fig. 2; XVIII and XIX, fig. 20.

T. venosus, Moore, P.Z.S. Lond. 1882, p. 245, pl. xii, ff. 6, 6*a* ♂.

With the exception of *T. balkanica*, a much smaller species, this is the darkest of the genus, and it does not appear to vary in size like the other species, its ♂ average size being about 26 mm., the ♀ being slightly larger (both *nara* and *theophrastus* reach these sizes not infrequently, but their average is certainly less); the colour of the male is dull sublustrous violaceous, with a single brown spot at the end of the cell, which is frequently almost absent in the secondaries. Moore says it has a broad marginal dusky border (the type form has the border increasing from the apex very rapidly in the primaries to a quarter of the inner margin), but this varies, and occasional specimens occur with barely more than a lineal dark border. The underside is more nearly related to *T. theophrastus* than to the others; the pattern being spotted, without lines, *i. e.* the rows of spots do not form continuous lines, the postmedian and submarginal series consisting of uniform and almost parallel rows of large spots in both wings. The Cashmire form is spotted above as is *balkanica*, but below it is typical.

The genitalia are more nearly allied to *balkanica*, but are decidedly larger and more robust. This is very noticeable in the clasps and even more so in the horn-like sclerites (virgae excitatae), which are as large again. The clasps are similar in shape, being broad and rounded on the upper edge, but being suddenly reduced and excised

near the apex. The tegumen is hood-shaped, open above, except for the rounded ridge at the rear; the falces are smaller in proportion than in *balkanica*. The aedoeagus is short and broad, and is suddenly reduced at the zone (for this name see Chapman in these Transactions, 1916, pp. 158, 159), where it tapers off to a fine point with two large cornuti in the vesica. The bristles on the clasps are not plentiful and are fine, those on the tegumen equally fine but longer than usual. The tectorius is developed on the same lines as in *nara*, but is shorter, less ample, and somewhat different in outline.

The androconia are oblong, evenly rounded distally; the sides of the oblong are of unequal length owing to the proximal end of the scale being quite different on one side of the foot-stalk to the other; on the one side it is evenly rounded, the other being excised, the foot-stalk is not in the centre and thus causes one side of the base to be longer than the other. There are sixteen rows of lamina.

Tarucus waterstradti, Druce. Plate XVII, fig. 16.

Tarucus waterstradti, Druce, P.Z.S. 1895, p. 585, pl. xxxii, f. 21 ♀.

This species is described from a female, and Druce says that the upperside is very similar to the upperside of the ♀ of *T. theophrastus*, Fab.

"Underside perhaps nearest to *T. venosus*, Moore. Fore-wing: basal streak shorter and much broader, and extending down to the submedian nervure, the streak beyond broader and placed at a much greater angle, the spots beyond the middle more in line, the submarginal row distinctly separated, and the marginal row smaller. Hind-wing: a broad basal streak from just below the costal margin to the anal angle; a broad streak beyond, also from the costal to the anal margin; then a series of spots as in *T. venosus*, which are more inclined to run parallel with the streaks; then a submarginal row of large distinct spots followed by a marginal row of small spots, the three upper being simply dots, the three lower gradually increasing towards the anal angle and dusted thickly with metallic green scales. The ground-colour of both wings is slightly tinged with yellowish and all the markings are black; the cilia of both wings black.

"Kina Balu (Waterstr.). Type, Mus. Staud."

The Bornean species is evidently a close ally of *venosus*, but the unique type is not available for comparison. I

have given a photographic reproduction of Druce's excellent figure in which the underside shows the pattern as well as the original drawing.

Tarucus balkanica, Freyer. Plates XIV, figs. 3–3*b*; XV, fig. 3, and XIX, figs. 21, 22.

L. balkanica, Frr., v, p. 63, pl. 421, ff. 1, 2 (1844).

♂. Deep lustrous violet, spotted with black; in the primary there is a spot closing the cell, a series of six postmedian spots, the second, third and fourth irregular and shifted outwards from the first, the fifth and sixth confluent, shifted well inwards; these occupy the same position as those on the underside, but are not merely showing through as they are definitely pigmented on the upper surface; there is also a small dark cloud in the tornus of the primary. The underside is white with the spots almost formed into lines or dashes; the postmedian line is almost crenulate and practically continuous in both wings; in the primaries it is curved to the costa from vein 6 and not infrequently is fractured at that point; the submarginal series on the primaries is prominent and generally intersected at the veins. The principal distinguishing feature is its deep violet colour with prominent black spots on the upperside.

The form from the Transcaspian region is unusually large and fine and is quite distinctive enough to be described as a local race; I propose for it the name of *T. balkanica areshana*, var. nov.

The blue though dark is much more lustrous than the form from Asia Minor or Syria, whilst the underside pattern is much more heavily marked, the postmedian and submarginal bands being more than as wide again and most commonly taking the form of broad bands, rather than rows of spots. Again, the size also is decidedly larger, my specimens of the type form measuring 21–22 mm. against the Aresh form, 26–29 mm. I have a series of a dozen specimens which were captured for me at Geok Tepe by my friend, Captain Malcolm Burr.

The species looked so different that at first I mistook it for *theophrastus*, and it is referred to again under that species.

The genitalia are usually small and slight, the clasps are broad and very suddenly excised very near the apex, which is reduced

and has more or less a straight termination, finely serrated; the horny sclerites are sickle-shaped with the blade portion only moderately curved; the bristles on the clasps are long but not very numerous; the tegumen is of the usual shape, with large, strong (proportionately) falces, the bristles being fairly long, but not very numerous. The aedoeagus is short and moderately stout and has the apical portion reduced as in most other species. The tectorius is of moderate size, of the usual shape, with the anellus rather definite.

The androconia are almost oval, the sides being nearly straight, but not quite so; they are evenly rounded distally, but not quite evenly rounded proximally, possibly caused by the foot-stalk being given off somewhat away from the centre; there are fourteen rows of lamina, the sculpturing of which is rather uneven.

It is interesting to find that the androconia of the Aresh race are markedly different to those of the type form; the scale is broader proximally almost evenly oval, but increasing in width to near its distal extremity, which is evenly but slightly rounded. The foot-stalk is given off almost at the centre, and there are nineteen rows of lamina which are heavily sculptured. The naming the race *areshana* is, I think, fully confirmed by the androconia.

Tarucus callinara, Butler. Plates XIV, fig. 4; XV, fig. 4; XVIII and XIX, fig. 23.

T. callinara, Butler, Ann. and Mag. N.H., vol. xviii, p. 185 (1886).

♂. Type form. Both wings lustrous violet blue with a single dark spot closing the cell in the primaries only. Underside entirely spotted, not in lines or dashes; the postmedian and terminal series of spots are parallel and are composed of definite spots in both wings; the basal marks of the secondaries are also spots.

T. callinara nigra, forma nov.

♂. Pale, sublustrous lilac with a large dark spot closing the cell in the primaries only, beyond which are one, two, or more dark spots, smaller than in *balkanica*, but quite distinct; the marking of the underside is finer than in the type form and inclined to resolve itself more into lines, *i. e.* the spots are apt to become confluent.

This form seems to be commoner than the type. I have a series from Cutch, from Karachi and Campbellpore.

It appears to me to be probable that this species and *extricatus* have been mixed together not infrequently, as it is most difficult to separate the type form (*i. e.* the form that is not spotted on the upper surface) from *extricatus*, Butler; both species are to be found at Karachi at the same time, as also is *nara*, but whether they obtain in exactly the same locality together I have been unable to find out. I fear I could only separate the type form of *callinara* from *extricatus* by an examination of the prehensores. These in *callinara* are very close to *balkanica*.

The clasps are very similar, but are decidedly larger and broader, the sclerites are also larger and heavier in shape and are not so sharply sickle-shaped; the falces are also proportionately larger and are without the reduced apical hook; the aedoeagus is, however, narrower than in *balkanica* and slightly longer; the bristles on both the clasps and the tegumen are much finer and are less numerous. The tectorius is very ample and broad at the base and is curved round at the rear up to the anellus, frontad it is convex and is strengthened at its edge by extra thickened chitin folded over to the upper edge of the organ.

The androconia are of a long oblong shape with straightish sides, a fairly even oval base (with the foot-stalk nearly central), and but slightly curved distally; there are twelve rows of lamina, of which the sculpturing is very definite and wide apart.

Tarucus extricatus, Butler. Plates XIV, fig. 5; XV, fig. 5, and XIX, fig. 24.

T. extricatus, Butler, P.Z.S. Lond., 1886, p. 366, pl. xxxv, f. 2 ♂.

♂. The type is a diminutive specimen from Campbellpore dated "31.v.'85," the abdomen is missing, so we cannot decide the point from the genitalia.

The colour is lilac blue, of a pale tone, the pattern is composed of fine lines rather than spots; the specimen, however, is very small indeed, so that the pattern is compressed into a very small area, and would therefore almost of necessity fall into lines. The type is a dry-season specimen. Those taken in September and onwards are more violet blue, and the underside pattern, though still fine,

resolves itself into spots and lunules and is less fine than in the type.

I see no reason to doubt the correctness of the general identifications of this insect; the genitalia are distinct from other species, they are small, the clasps are broad, rounded on the upper edge and slightly dentate, the lower apex being produced forward somewhat and is very slightly dentate; the horny sclerites are fine and curved; the tegumen is similar to the usual pattern, but the falces are very short and angled sharply at the rear; the aedoeagus is fine and waved with the pointed apex generally obtaining in the genus. The tectorius is very simple and of moderate dimensions.

The androconia are oblong, subovate proximally, and slightly curved distally; there are twelve rows of lamina, the sculpturing of which is rather small and well separated; the foot-stalk is given off rather out of the centre.

Tarucus alteratus, Moore. Plates XIV, fig. 6; XV, fig. 6; XVIII and XIX, fig. 25.

T. alteratus, Moore, P.Z.S. Lond., 1882, p. 215, pl. xii, ff. 4, 4*a* ♂.

♂. Upperside: the bluest of the genus with less violet than any of its allies; it is perhaps the only one that can truly be termed blue; the spot closing the cell, in the primaries only, is not very prominent, whilst the spot in the secondaries at the anal angle is distinct. The terminal dark line is linear. The underside is greyish rather than white; the pattern is small, very much broken up, the spots and dashes being rusty red; in some females this may become tawny brown.

The genitalia are distinct and large, the clasps being much the shape of a ham with the apex sharply serrate at the knuckle end; the horn-like sclerites are straight, stout and long; the bristles are long, strong and abundant; the tegumen is not so deeply divided, with rather finer and shorter bristles and with the falces large and very strong; the aedoeagus is short with the front part suddenly reduced and tapering to the tip. The tectorius is rather small, of the usual shape with the anellus very pronounced. The androconia are large and broad, somewhat ovate proximally, the base being evenly oval with the foot-stalk central; the sides are very slightly curved; the distal curve is slight also and not quite even; there are sixteen rows of lamina, the sculpturing being wide apart and very distinct.

Tarucus bengalensis, sp. nov. Plates XIV, fig. 8; XVI, fig. 8, and XIX, fig. 27.

♂. Both wings pale violet-blue tinged with lilac, the colour being solid and not showing the underside through, except to a very slight extent. Primaries with a conspicuous spot closing the cell. Terminal lines blackish. Underside very similar to *mediterraneae*, but the small series of spots just beyond the cell in both wings nearer the cell than in that species where they are close to the postmedian lines. Postmedian and submarginal lines parallel and decidedly broader than in the previous species.

Genitalia nearer to *T. alteratus*, but very different from *T. mediterraneae*, the clasps are large and are suddenly excavated in a deepish arc midway along the upper edge, from whence they extend in a broad curve to the apex, which is straightish but sharply serrated; the horn-like sclerites are very long, rather narrow at the base and tapering quickly to a fine point, they are curved the reverse way to those of the species already mentioned and extend well beyond the apex of the clasp, the bristles are fine, longish, but few in number; the tegumen is of the usual pattern, less ample and with very long falces; the aedoeagus is quite different from either of the species referred to previously, being more of the *balkanica* pattern; it is, however, decidedly longer with the apex suddenly reduced at rather more than a third from the tip, and having a shorter pointed process from the point of reduction. The tectorius is of moderate size and well developed.

Expanse 25 mm.

Hab. Calcutta.

Type in my collection.

The genitalia are so different to the nearest allies that there can be no question as to the advisability of naming the insect, even though at present it is unique.

The androconia are broadly oval, the curve distally being slightly broader than the proximal section and the sides are also somewhat rounded; there are eighteen rows of lamina, the sculpturing being fine and rather close.

Tarucus mediterraneae, sp. n. Plates XIV, figs. 7–7*b*; XVI, fig. 7; XIX, fig. 26.

♂. Upperside lilac blue, with a black bar closing the cell in the primaries only, anal spot in secondaries distinct, terminal borders very narrowly blackish. Underside, white with dark markings.

Primaries with the basal and subbasal marks as usual, but well separated; a long narrow dash from close to the costa across the end of the cell, directly below which is a broader waved dash, these are followed by a subcostal spot with a second spot projected far out between veins 5 and 6, a dash almost below the subcostal spot between veins 3 and 5; postmedian line continuous, obtusely angled between veins 5 and 6. Submarginal line consisting of a series of internervular spots. Secondaries with a basal stripe, directly below which is an inner marginal spot, a median row of four spots below each other, the two lowest of which may be confluent, a dash closing the cell, two spots below the costa generally united, three united spots projected outwards between veins 3 and 6, two united spots below the dash closing the cell, a continuous curved line just beyond these spots, followed by a series of submarginal spots with metallic blue green suffusion, the second anal spot being the most prominent.

♀. Upperside: both wings brown with whitish traces in the discal area. Underside as in the male.

Expanse, ♂ 23–26 mm; ♀ 22–23 mm.

Hab. Egypt (Alexandria); Algeria; Palestine.

Types in my collection from Alexandria.

Specimens from Cairo are paler above with finer markings below, whilst the form from Palestine is much paler above and is slightly larger also. A pair from Biskra (Algeria), collected by Eaton in 1895, are more heavily spotted below, whilst the female is well suffused with blue in the basal area of the primaries.

Lord Rothschild has in the Tring Museum a series collected in different parts of Algeria, and several hundred miles into the Sahara. I shall, however, refer to these again under the species *theophrastus*.

In Section I of the genus this species is an excellent example of the instability of pattern, specimens from Alexandria and Cairo differing to some extent, both differing more markedly from the Biskra pair, whilst these from Biskra differ quite perceptibly from those in the Tring Museum from other Algerian localities.

The genitalia are fortunately easily recognisable and differ from others of the genus; the clasps are large and broad, rapidly tapering for the apical third, the whole of this portion being sharply and deeply dentate, the apex itself consisting of two sharp teeth; the horn-like sclerites are very broad at their base, tapering narrower for two-thirds where they are angled downwards and are rapidly reduced to a

fine point extending to the apex of the clasps; the bristles are longish, moderately stout, but not numerous; the tegumen is fairly large of the usual pattern with strong falces; the bristles being finer and shorter than those of the clasps; this is, however, usual; the aedoeagus is long and waved; the vesica being finely shagreened, and the tectorius ample and of the usual shape; it is, I think, the largest in the genus. The androconia are very broad, and were it not that one side of the proximal extremity is excised, it would form an evenly-shaped oblong; the foot-stalk is given off centrally; there are seventeen rows of lamina rather widely separated, whose sculpturing is somewhat small.

Section II contains three species, *T. grammica*, G.-Smith, *T. sybaris*, Hopffer, and *T. quadratus*, Grant. The first is a species from Mombasa and from Somaliland, the second a widely-spread, if local, South African insect, and the last a species from Socotra.

The genitalia in all of these lack the horn-like sclerites which are so peculiar a character of the first section; *quadratus*, however, has developed a tusk-like extension of the upper apex of the clasps, and thus forms a connecting link with Section III, containing only the type of the genus. All three species in Section II have the same type of aedoeagus as has Section I.

Tarucus grammica, Grose-Smith. Plates XIV, fig. 9, and XVI, fig. 10.

Lycaenesthes grammica, Grose-Smith, Rhop. Exot., ii, p. 102, pl. xxiii, ff. 3, 4 (1893).

♂. Both wings dark brown. Primaries with a darker spot closing the cell; secondaries with a terminal row of spots encircled with white, more prominently on the inner side. There is a trace of a similar row of spots on the termen of the primaries, but it is very obscure. Underside white with the markings of the primaries large. From the spot closing the cell in the primaries there is a short, broad dash forming an L with the cell spot; the broken series of marks outside this is united into an irregular band, very broad below vein 2; the postmedian series of spots is pushed far out, near to the subterminal series, the former being composed of fair-sized spots increasing in size towards the inner margin where they coalesce, the latter consists of six internervular smaller spots; the usual basal dash and subbasal wedge-shaped mark are present. Secondaries: a basal subcostal dash with a spot below it, followed

by four short distinct dashes; a short costal and subcostal confluent mark touching the spot closing the cell, below which is another short dash; outside the cell spot are three irregular confluent spots, beyond which is the postmedian row of spots moderately evenly curved, followed by the subterminal row, some of which are slightly iridescent.

Genitalia: the clasps are very broad and are evenly curved, but if flattened somewhat wedge-shaped; the bristles are fine and not long; the tegumen is of moderate size, and the falces are small; the bristles fine and shortish; the aedoeagus is shortish, suddenly reduced all round about the middle, from whence it gradually tapers in a curve to a fine point. The tectorius is very reduced.

This is a very distinct species and was first described by Grose-Smith as *Lycaenesthes grammica* in 1893 (l.c.). In 1898 Miss Sharpe described her *louisae*, as it had not at that time been discovered that the former species had nothing to do with the genus *Lycaenesthes*; *louisae* therefore falls as a synonym to *grammica*.

Tarucus sybaris, Hopffer. Plates XIV, fig. 10; XVI, fig. 9, and XX, fig. 28.

Lycaena sybaris, Hopff., Monats. K. Preuss. Akad. Wissensch., p. 642 (1855).

♂. Blue tinged with mauve in both wings. The primaries with a black spot closing the cell, and broadish black margins; the secondaries with a submarginal row of black spots from the anal angle to the costa, decreasing in size as they approach the costa; outside this row is a fine white line, which is succeeded by the black termen of uniform and moderately narrow width. The fringes have the basal half black and the outer half grey with a slight indication of tessellation. Underside white spotted with black, the contrast being sharper than in any other species. The primaries have the usual basal marks, the wedge-shaped mark being generally somewhat L-shaped; a large spot closes the cell with a small one between it and the costa, beyond which is another somewhat larger one between veins 6 and 9, between veins 5 and 3 are two confluent spots, and two more confluent spots further inwards are below vein 3, between 5 and 6 is a single isolated spot, shifted right out on to the postmedian curved series of six internervular spots, this being near the margin and very close to the subterminal series of internervular spots. Secondaries with three basal spots and four subbasal spots below each other; the upper two basal spots are connected to each

Explanation of Plate XIV.

Fig. 1–1*a*. *Tarucus nara*, ♂, p. 273.
2. ,, *venosus*, ♂, p. 275.
3–3*b*. ,, *balkanica*, ♂, p. 277.
4. ,, *callinara*, ♂, p. 278.
5. ,, *extricatus*, ♂, p. 279.
6. ,, *alteratus*, ♂, p. 280.
7–7*a*. ,, *mediterraneae*, ♂, p. 281.
7*b*. ,, *mediterraneae*, ♀, p. 281.
8. ,, *bengalensis*, ♂, p. 281.
9. ,, *grammica*, p. 283.
10. ,, *sybaris*, ♂, p. 284.
11. ,, *quadratus*, ♂, 285.
12–12*a*. ,, *theophrastus*, ♂, p. 286.
13. ,, *ananda*, ♂, p. 289.
14. ,, *bowkeri*, ♂, p. 294.
15. ,, *dharta*, ♂, p. 291.
16. ,, *clathratus*, ♀, p. 293.


1.


1a.


2.


3.


3a.

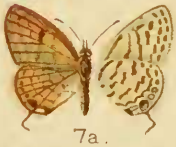

3b.


4.


5.


6.


7.


7a.


7b.


8.


9.


10.


11.


12.


12a.


13.


14.


15.


16.

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THE GENUS TARUCUS

G. T. B.-B., Photo. *André, Sleigh & Anglo, Ltd.*

GENITALIA OF THE GENUS TARUCUS.

Explanation of Plate XV.

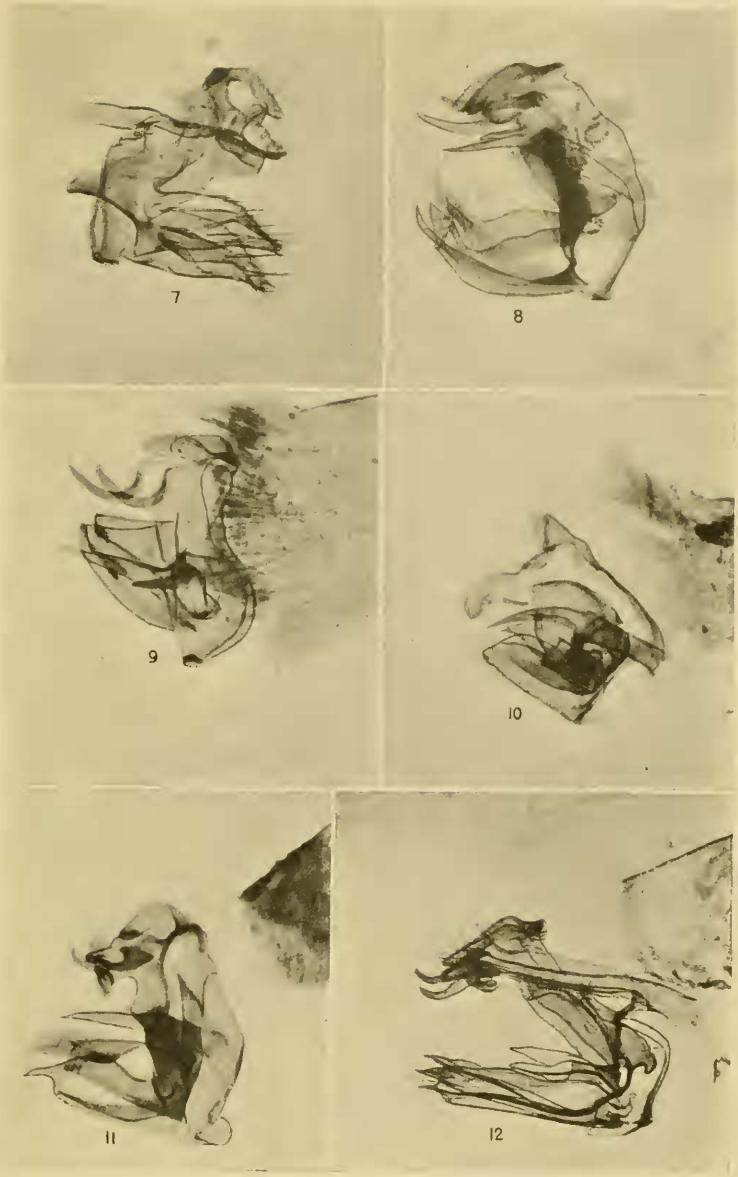
Fig. 1. *Tarucus nara*, p. 273.
2. ,, *venosus*, p. 275.
3. ,, *balkanica*, p. 277.
4. ,, *callinara*, p. 278.
5. ,, *extricatus*, p. 279.
6. ,, *alteratus*, p. 280.

The figures of the genitalia are magnified 30 diameters.

Explanation of Plate XVI.

Fig. 7. *Tarucus mediterraneae*, p. 281.
8. ,, *bengalensis*, p. 281.
9. ,, *sybaris*, p. 284.
10. ,, *grammica*, p. 283.
11. ,, *quadratus*, p. 285.
12. ,, *theophrastus*, p. 286.

The figures of the genitalia are magnified 30 diameters.



G. T. B.-B., Photo. *André, Sleigh & Anglo, Ltd.*

GENITALIA OF THE GENUS TARUCUS.

G. T. B.-B., Photo. *André, Sleigh & Anglo, Ltd.*

GENITALIA, etc., OF THE GENUS TARUCUS.